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Adulticide Control & New Technology

By

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ULV Fogging

When Should I Adulticide?

- When You Can’t Access Water Site
- When You Can’t Find the Water Site
- Missed The Flooding
- Virus Present in Adult Mosquitoes
- Virus Present in Birds
- Humans Contracted Mosquito-Borne Virus

ULV Fogging

- Surveillance
- Treatment Criteria
- Equipment
- Weather
- Calibration
- Droplet size
- Label
- Pesticides
- Control Techniques
- Treatment Evaluation
- New Technology

Control Effectiveness

- Adulticiding is less effective than larviciding
- Adulticiding is more effective in open areas
- Adulticiding is less effective in residential neighborhoods and areas with tall vegetation

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Typical Residential Site

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Surveillance

When Are The Mosquitoes Most Active?

How Many?

What Species?

Surveillance

- Landing Counts
- CO2 Traps
- New Jersey Light Traps
- Sequential Trap

Treatment Criteria

- Numbers
- Species
- Disease Present
- Service Requests

Treatment Criteria

VIRUS DETECTED IN REGION (Level 3)			
Culex		**Ochlerotatus/Culiseta**	
Landing count greater than 5/min **OR** EVS count greater than 50/NIGHT **OR** NJLT count greater than 5/night **IN RURAL AREA**	Treat; set EVS traps (2 or more) in area of positive human or animal case, sentinel or pool Submit pools for testing if possible Continue until count below threshold	Landing count greater than 20/min in rural area **OR** EVS count greater than 200/night **OR** NJLT count greater than 20/night **IN RURAL AREA**	Treat; set EVS traps in area after each treatment Continue until count below threshold
Landing count greater than 2/minute **OR** EVS count greater than 20/night **OR** NJLT count greater than 2/night **W/IN 2 MILES OF RESIDENTIAL AREA**	Treat; set EVS traps (2 or more) in area of positive human or animal case, sentinel or pool Submit pools for testing if possible Continue until count below threshold	Landing count greater than 10/minute **OR** EVS count greater than 100/night **OR** NJLT count greater than 10/night **W/IN 2 MILES OF RESIDENTIAL AREA**	Treat; set EVS traps in area after each treatment Continue until count below threshold
Landing count greater than 1/minute **OR** EVS count greater than 10/night **OR** NJLT count greater than 1/night **IN RESIDENTIAL AREA**	Treat; set EVS traps (2 or more) in area of positive human or animal case, sentinel or pool Submit pools for testing if possible Continue until count below threshold	Landing count greater than 5/minute **OR** EVS count greater than 50/night **OR** NJLT count greater than 5/night **IN RESIDENTIAL AREA**	Treat; set EVS traps in area after each treatment Continue until count below threshold

Notes: [1] "Region" includes MVCAC Coastal Region districts, plus San Joaquin, Sacramento-Yolo and Lake Counties
[2] "Rural area" excludes remote areas like marshes, industrial areas that are not inhabited and out of normal flight range from populated areas (e.g. Rhodia, Point Edith). These will be considered on a case-by-case basis.

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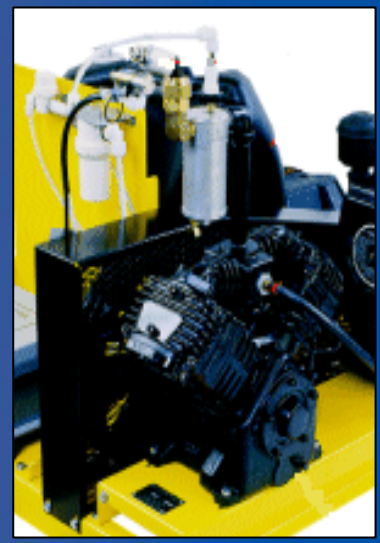
Different Sized ULV Generators

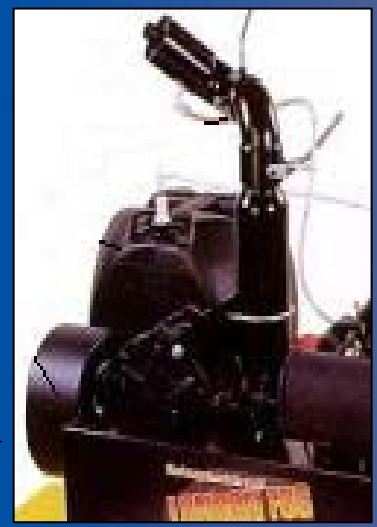
Different Types of Foggers

- Electric Rotary Atomizer

- High Pressure,
  Air Compressor & Nozzle



- Low Pressure,
  High Volume Air Blower &
  Nozzle



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Weather

- Wind
- Inversion
- Temperature
- Rain or Fog

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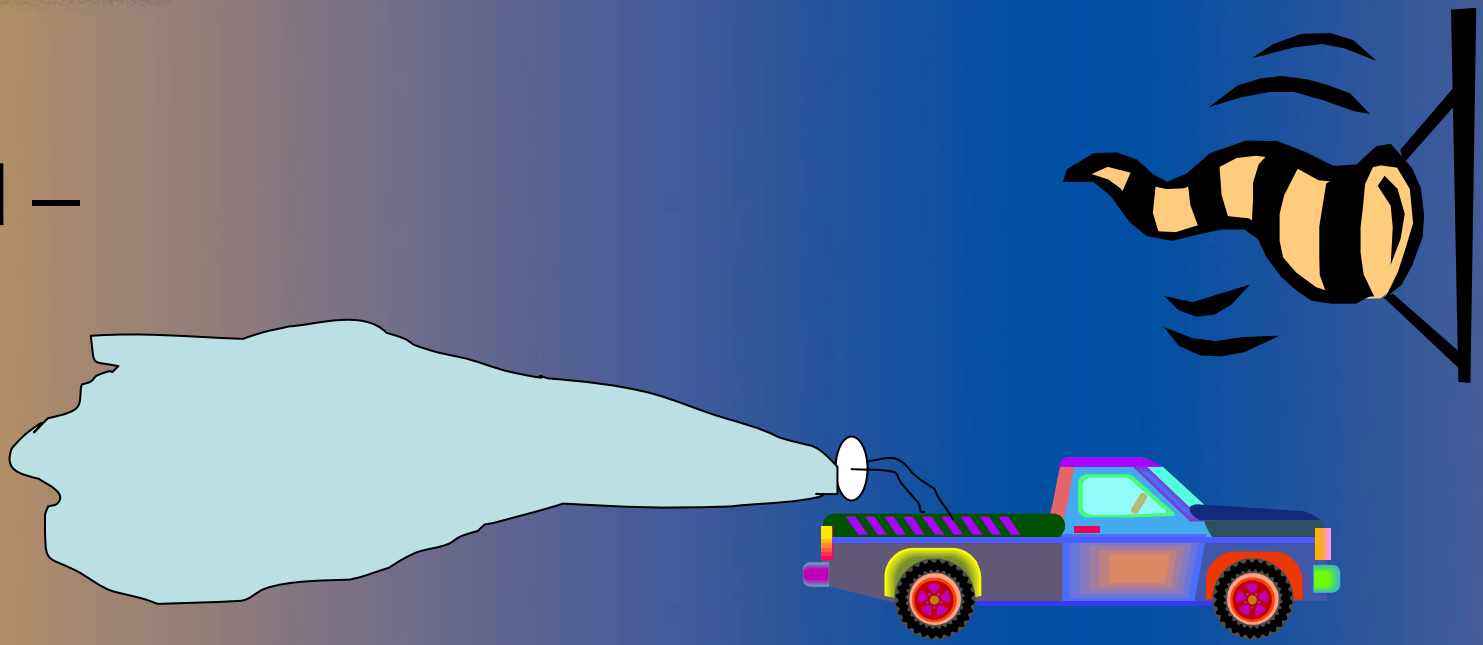
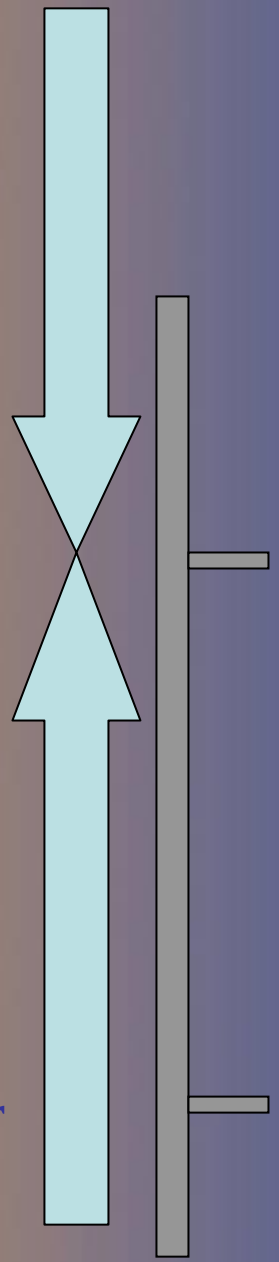
Wind –



> 5 mph – Mosquitoes usually do not fly.
But may be blown by the wind.

< 5mph – Mosquitoes may be flying.

Conditions for truck mounted ULV fogging



Cool Air

Temperature Probe at 30 feet

Aerosol

Warm Air

Temperature Probe at 6 feet

Kill Zone

Calibration

- **Measure the Amount Collected**
- **Calculate needed flow based on vehicle speed and application rate**
- **Adjust Flow (if necessary)**
- **Duplicate**
- **Keep Records**
- **Calibrate for each chemical and flow rate**

Droplet Size

- Droplets 5 to 25 microns in size are ideal for ULV applications
- Doubling of droplet diameter results in an 8 fold increase in volume
- A 20 micron drop falls at approximately 0.01 meters a second (1 hour to fall 100 feet)
- A 50 micron drop falls at approximately 0.1 meters a second (6 minutes to fall 100 feet)

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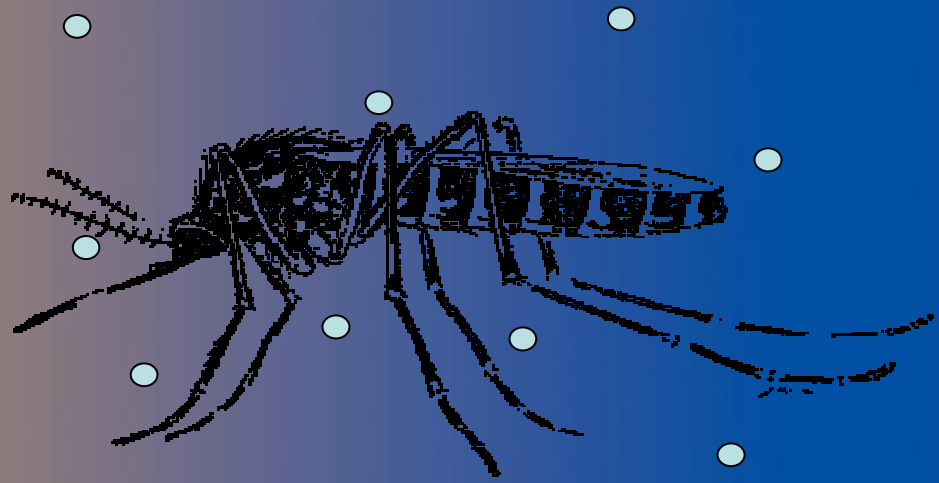
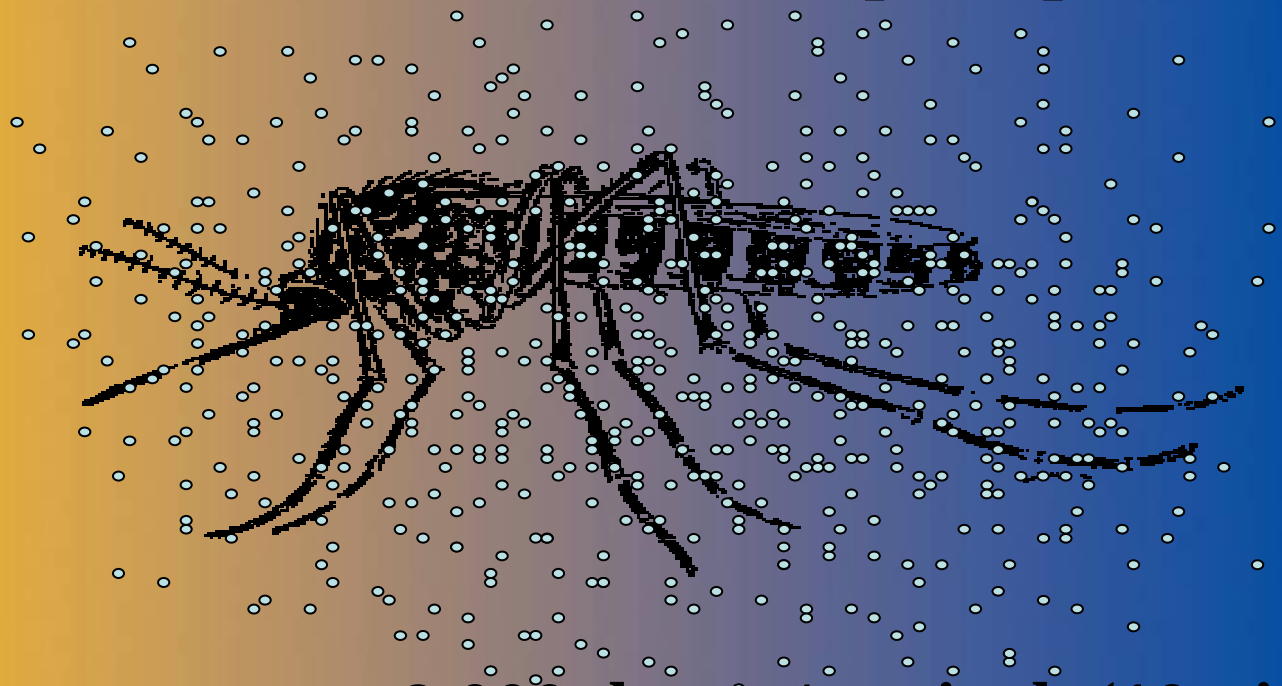


1 fl. Oz.

+ or – 140 drops / sq. inch (40 micron)



1 fl. Oz.

+ or – 9,000 drops / sq. inch (10micron)

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Droplet Testing

Coated Microscope Slides

AIMS / DC-III

- **Electronic Droplet Measuring Systems**

Droplet Testing – Aims / DC III

Label

Labels May Specify:

- **Minimum & Maximum Application Rates**
- **Droplet Size**
- **Droplet Size Range**
- **Vehicle Speeds**
- **Wind Speeds Allowed**
- **Water Setback**
- **Crop Restrictions**

Know how to determine all of these
Remember,
-Sub-lethal dose leads to resistance
-Poor Droplet Size can result in Poor Control

Pesticides

- Organophosphates (Malathion, Trumpet, Fyfanon)
- Pyrethroids/Permethrins (Permanone, Aqua-Reslin)
- Resmethrins (Scourge)
- Natural Pyrethrins (Pyrenone, Pyrocide)

- Water and Oil Base

Advantages & Disadvantages of Pyrethroids

- Advantages
  - No Frenzy
  - Non Corrosive
  - Quick Knockdown
  - Low or no order
- Disadvantages
  - More Expensive
  - Some Formulations Can Not Be Applied Over Crops

Advantages & Disadvantages of Organophosphates

- Advantages
  - Cheap
  - Can Be Applied Over Crops
- Disadvantages
  - Slow knockdown
  - Cause frenzy
  - Corrosive
  - Resistance
  - Odor
  - Health Issues

Control Techniques

- Minimum 300 ft swath
- Apply perpendicular to the wind
- Vehicle speed 5-15 mph

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Evaluate Treatments

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Why Didn't I Kill Anything?

- Wind Blowing In The Wrong Direction
- No Inversion
- No Wind
- Wind Speed Is Too High
- Droplets Are Too Large
- Droplets Are Too Small
- Barriers Blocked Spray
- Pesticide Evaporated
- Resistance
- Pesticide Failure

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Resistance

Rotate Adulticides

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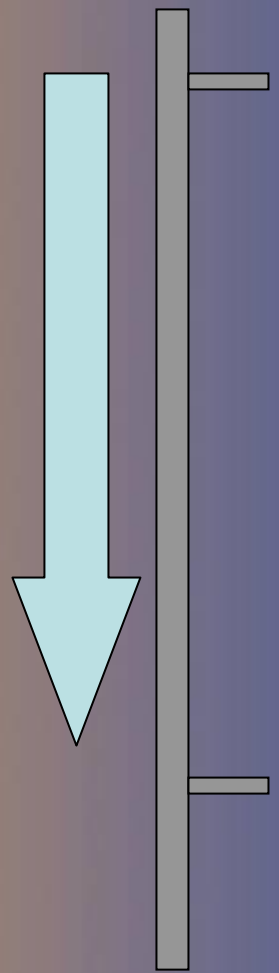
Adulticide Applied by Aircraft

Conditions for Aerial Adulticiding



Temperature Probe on Aircraft

Warm Air

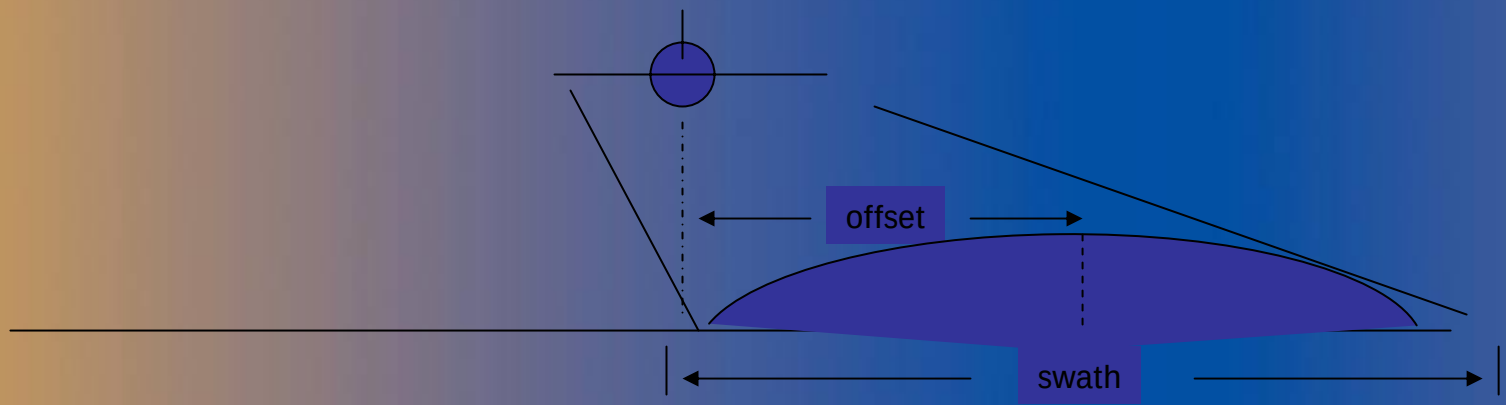
Low Wind or No Wind Speed

Aerosol

Temperature Probe at 6 feet

Warm Air

Where Will It Land?



4 Variables to Remember During Truck Mounted ULV Fogging Operations

- Spray when mosquitoes are active
- Spray when there is an inversion
- Make sure your equipment is calibrated and you have the correct droplet size
- Wind Speed is less than 10 mph

Technology

- FFAST Injector System
- Accuflow
- Stab/Tracker
- Monitor 3/Monitor 4
- Geoflow
- Wingman TM GX & AIMMS 20

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FFAST Injector System

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ACCUFLOW

ACCUFLOW

- GPS variable flow
- In-cab controls
- No recording capability
- Designed to give you accurate pesticide application at varying speeds

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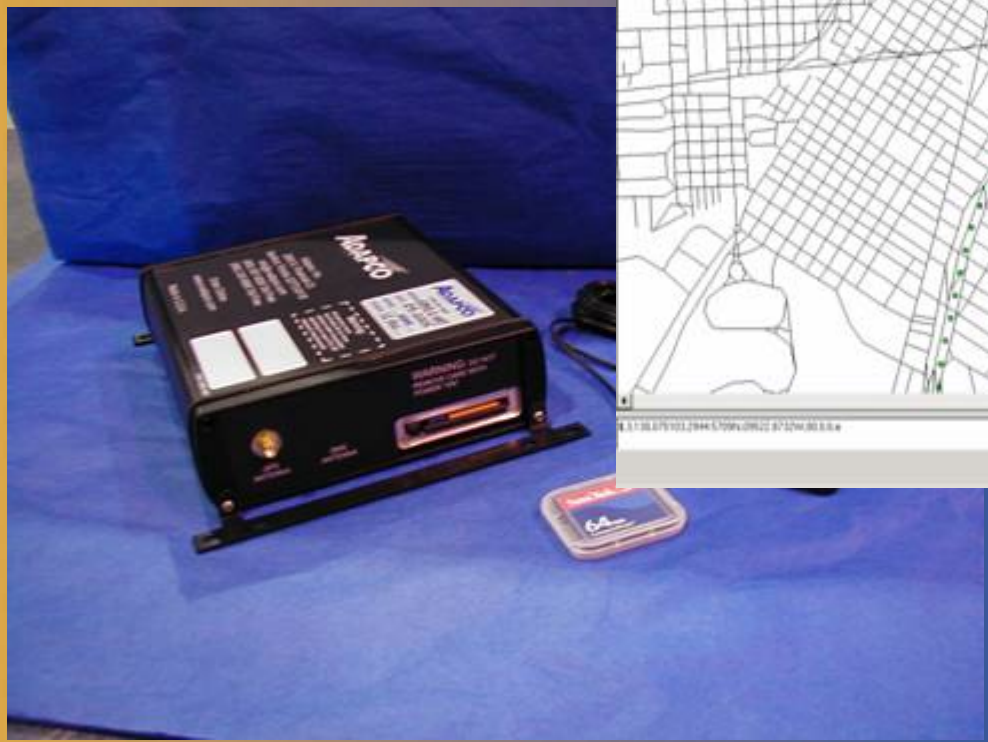
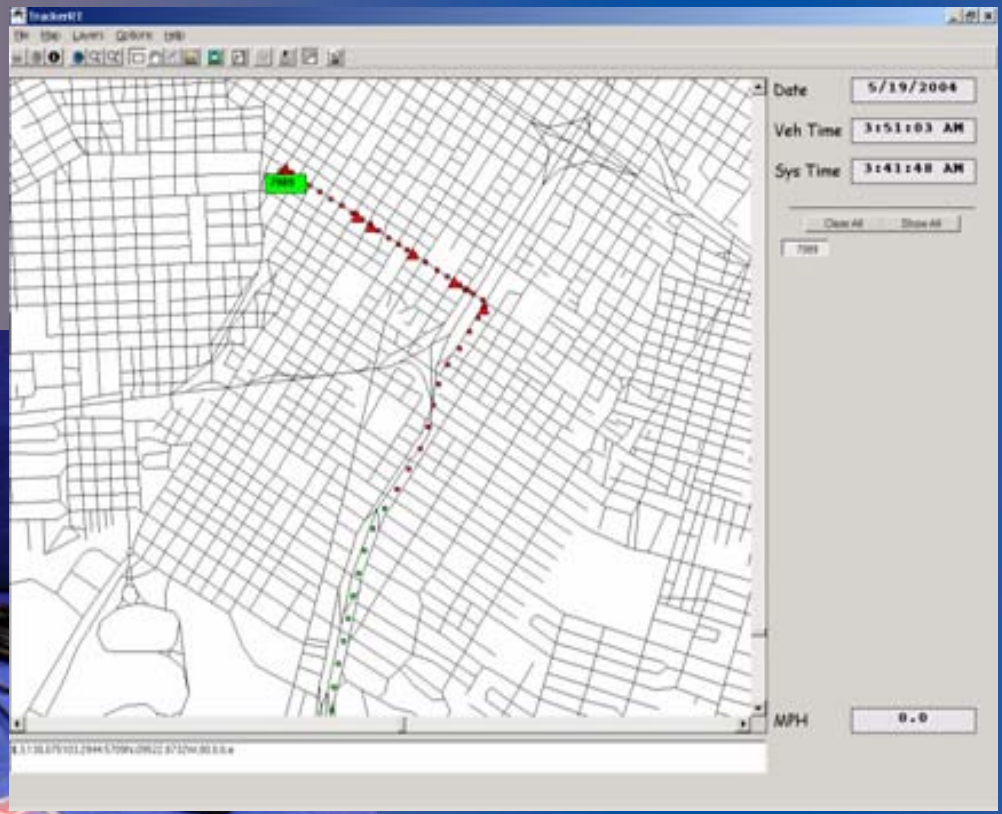
Stab/Tracker





Stab/Tracker

- Maps Spray Mission
- Shows if Spray pump was on/off
- No variable flow capability
- Designed to record where vehicle traveled and where spraying took place
- Post Event or Real Time

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Monitor 3

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Monitor 4

Monitor 3/4

- Variable flow
- In-cab controls
- Provides a hard-copy report of pesticide applications
- Mapping capability
- Gives the applicator variable flow and provides a report with location, amount of pesticide applied, acres treated, etc.

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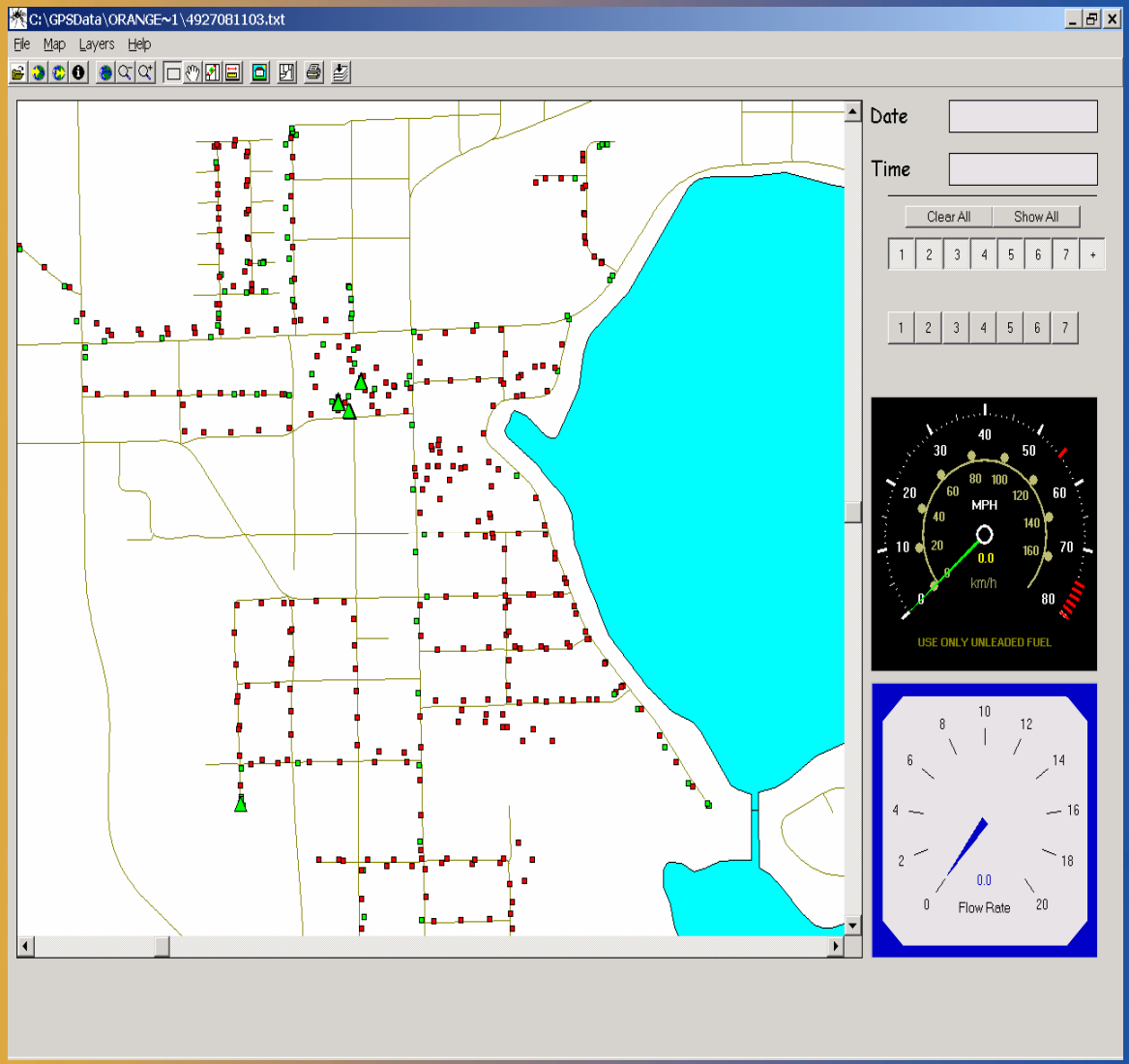
Post event & real time vehicle activity tracking



- Area & driver ID
- Latitude & Longitude
- Date & time stamps
- Mission start / end times
- Chemical & oz. applied
- Total miles vs. spray miles
- Total time vs. spray time
- Acres treated
- Average spray speed
- Speed & heading
- Flow rate & status

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GeoFlow

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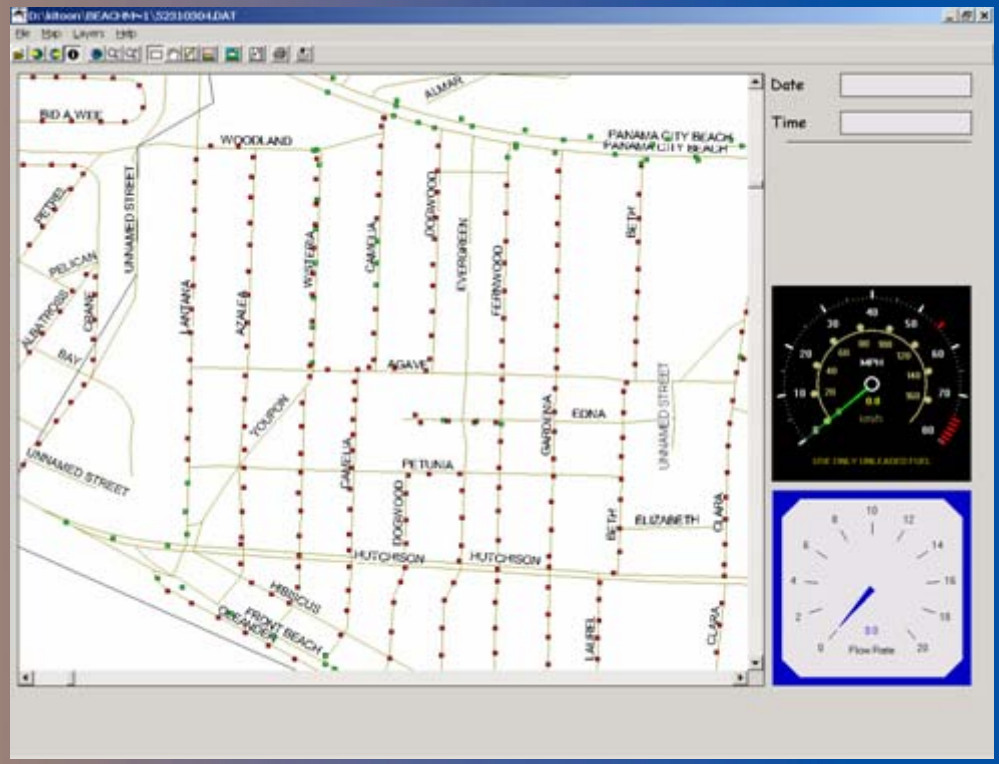
Geoflow



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Geoflow

- Variable flow
- Programmed spray route
- In-cab controls and touch screen
- In-cab map and directional bar
- Mapping and reporting features
- Mission data
- Capable of wireless file transfers
- Designed for agencies that hire seasonal employees or want greater control of ULV treatments

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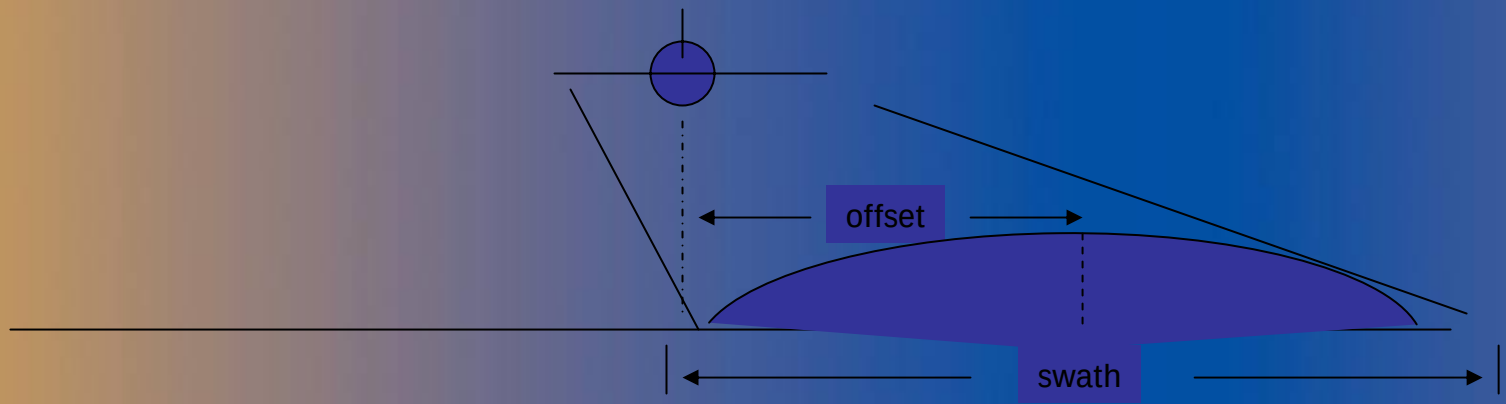
Wingman GX
Aerial Management System

- Wingman GX
  - Calculates offset by running AGDISP after each run
  - Based on average of wind speed and direction of previous run



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AIMMS 20

Wingman GX & AIMMS 20

- Real time meteorology at release height in cockpit
- USDA AGDISP drift model prediction each spray run in real-time
- Touch screen color moving map
- Variable flow
- Capable of wireless file transfers
- Mapping and reporting features
- Mission data

Why Do I Need Technology?

- Money Savings
- Apply Pesticides at the Precise Application Rate (don’t underdose or overdose)
- Document Amount of Pesticide Applied
- Document Where Pesticides Were Applied

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Thank You

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